Technologies – Design and Technologies scope and sequence: Levels 7 to 10

| **Levels 7 and 8** | **Levels 9 and 10** |
| --- | --- |
| **Achievement standard** |  |  |  |  |
| By the end of Level 8, students explain how people design, innovate and produce products, services and environments that address ethical considerations. For each of the 4 Technologies Contexts sub-strands, they discuss how the features of technologies impact on design decisions, and create designed solutions based on analysis of needs or opportunities. Students generate and adapt design ideas, processes and solutions, and justify their decisions against their own and others’ predetermined design criteria for ethical considerations, including sustainability and worldviews. They communicate design ideas and solutions to audiences using technical terms, graphical representation techniques and appropriate attributions. They document production processes independently and collaboratively, and develop and co-develop the production and implementation of these processes to safely produce designed solutions. | By the end of Level 10, students explain how people consider factors that affect design decisions, and the technologies used to design and produce products, services and environments that address ethical considerations. They explain and critique the contribution of innovation, enterprise skills and emerging technologies to sustainability and worldviews. For one or more of the Technologies Contexts sub-strands, students discuss the features of technologies and their appropriateness for purpose, and use design thinking to develop and co-develop designed solutions based on an analysis of identified needs or opportunities. Students create, adapt and refine design ideas, processes and solutions, and justify their decisions against predetermined design criteria that address ethical considerations. They critique and communicate design ideas, processes and solutions to a range of audiences using technical terms, graphical representation techniques and appropriate attributions. Students work independently, collaboratively and in teams to develop and implement project management plans, making adjustments when necessary. They select and use appropriate technologies skilfully to safely produce designed solutions. |
| Content descriptions |
| Strand: Technologies and Society |
| *Students learn about:* |
| how people in design and technologies occupations consider ethical factors to design and produce products, services and environments VC2TDE8S01 | how people in design and technologies occupations consider ethical factors to innovate and improve products, services and environments VC2TDE10S01 |
| the impacts of innovation and the development of technologies on designed solutions for ethical considerations including sustainable living VC2TDE8S02 | the impacts of innovation, enterprise and emerging technologies on designed solutions for ethical considerations including sustainable living VC2TDE10S02 |
| Strand: Technologies Contexts |
| Sub-strand: Engineering principles and systems |
| *Students learn to:* |
| analyse how force, motion and energy are used to manipulate and control engineered systems that are ethicalVC2TDE8C01 | analyse and make judgements on how the characteristics and properties of materials are combined with force, motion and energy to control engineered systems that are ethicalVC2TDE10C01 |
| Sub-strand: Food and fibre production |
| *Students learn to:* |
| analyse how food and fibre are produced in managed environments and how these can become ethicalVC2TDE8C02 | analyse and make judgements on the ethical and secure production and marketing of food and fibre enterprises VC2TDE10C02 |
| Sub-strand: Food specialisations |
| *Students learn to:* |
| analyse how properties of foods determine preparation and presentation techniques when designing solutions for healthy eating and other ethical considerationsVC2TDE8C03 | analyse and make judgements on how the sensory and functional properties of food influence the design and preparation of ethical including sustainable food solutions for healthy eating VC2TDE10C03 |
| Sub-strand: Materials and technologies specialisations |
| *Students learn to:* |
| analyse how characteristics and properties of tools, materials, systems and components can be selected, manipulated and combined to create designed solutions that are ethicalVC2TDE8C04 | analyse and make judgements on how characteristics and properties of materials, systems, components and tools can be combined to create designed solutions that are ethical VC2TDE10C04 |
| Strand: Creating Designed Solutions |
| Sub-strand: Investigating and defining |
| *Students learn to:* |
| explain needs or opportunities for designing, and investigate and select tools, materials, processes and components to create designed solutionsVC2TDE8D01 | analyse needs or opportunities for designing; develop design briefs; and investigate, analyse and select materials, systems, components and tools to create designed solutions VC2TDE10D01 |
| Sub-strand: Generating and designing |
| *Students learn to:* |
| generate, test, iterate and communicate design ideas, processes and solutions using technical terms and graphical representation techniques and appropriate attributions, using manual and digital tools VC2TDE8D02 | apply innovation and enterprise skills to generate, test, iterate and communicate design ideas, processes and solutions, using technical terms and graphical representation techniques and appropriate attributions using manual and digital tools VC2TDE10D02 |
| Sub-strand: Producing and implementing |
| *Students learn to:* |
| select, justify and use suitable tools, materials, processes and components to safely make designed solutions VC2TDE8D03 | select, justify, test and use suitable technologies, including processes, and skills, and apply safety procedures to safely make designed solutions VC2TDE10D03 |
| Sub-strand: Evaluating |
| *Students learn to:* |
| collaboratively develop design criteria that include ethical considerations to evaluate design ideas, processes and solutionsVC2TDE8D04 | develop design criteria including sustainability to evaluate design ideas, processes and solutions VC2TDE10D04 |
| Sub-strand: Planning and managing |
| *Students learn to:* |
| develop project plans to individually, collaboratively and in teams manage time, cost and production of designed solutionsVC2TDE8D05 | develop project management plans for intended purposes and audiences to individually and collaboratively and in teams manage projects, taking into consideration time, cost, risk, processes and production of designed solutions VC2TDE10D05 |